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ABSTRACT

A project was conducted to develop a curriculum package that defined the specific math, science, and language arts skills presently being taught at a vocational skills center that offered training in 20 job skill areas and served an 11-school district. The information gathered during the project was to serve as a basis for granting cross-credit to high school students receiving training at the skills center. The project staff devised specific competencies for each academic discipline being taught within individual programs. Combination curriculum outlines and information packages were completed for the following program areas: metal fabrication, electronics technology, machine trades, automated office systems, dental assisting, fashion merchandising, medical office assisting, and construction trades. Each outline contained a discussion of the ways in which math, science, and language arts skills were covered in the curriculum; an outline of the specific assignments, instructional hours, learning activities, and evaluation exercises used to cover each competency; a bibliography of course materials used to teach the competencies; and sample handouts distributed to students in the given program. These curriculum outlines not only provided documentation for awarding credit but also served as curriculum and lesson planning guides. (This report includes copies of the eight curriculum outline and information packages developed during the project.) (MN)

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DEFINING MATH AND SCIENCE COMPETENCIES IN VOCATIONAL PROGRAMS

FINAL REPORT
Project No. 84-AWD(233)NB

Curriculum Development Project
Conducted Under Public Law 94-482

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December 31, 1984

Research Coordinating Unit
WASHINGTON STATE COMMISSION FOR VOCATIONAL EDUCATION
OLYMPIA, WASHINGTON 98504

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FINAL REPORT

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The project reported herein was performed pursuant to a grant from the Research Coordinating Unit of the Washington State Commission for Vocational Education. Contractors undertaking such projects under the Commission for Vocational Education sponsorship are encouraged to express freely their professional judgement in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Commission for Vocational Education position or policy.

Janet Carlson, Director
Sno-Isle Vocational Skills Center
9001 Airport Road
Everett, Washington 98204

December 31, 1984

SUMMARY

Sno-Isle Vocational Skills Center, an eleven school district cooperative offering vocational training in twenty job skill areas, has just completed a curriculum development project through the Washington State Commission for Vocational Education. The intent of the project was to develop a curriculum package which defined specific math, science or language arts skills which are presently being taught in each of eleven Sno-Isle Vocational Skills Center programs. This information is to be used with local districts to provide justification for granting of high school academic credit. In order to provide valid data for awarding cross-credit, we set out to devise specific competencies for each academic discipline being taught within individual programs defining content, learning activities, materials/resources and method of evaluation. Utilizing 60 instructional hours for a credit, we identified instructional hours for each competency and recommended credit based on total instructional hours for each academic discipline. A simple form was developed and approved whereby learning activities, instructional hours, materials/ resources and evaluation could be shown for each specific competency. This provides not only documentation for awarding credit but acts as a curriculum and lesson planning guide for instructors for evaluation and accountability in achieving specific academic competencies. Because of changes in staff and new instructors coming into several programs, we have completed the following academic competency documents listed by program area:

Metal Fabrication -- Mathematics
Electronics Technology -- Math
Machine Trades -- Math
Automated Office Systems -- English
Dental Assisting -- Science/Health
Fashion Merchandising -- English, Math
Medical Office Assisting -- Science/Health
Construction Trades -- Math (competencies only)

With the exception of Metal Fabrication and Construction Trades, all documents contain bibliographies. We have also developed a single page matrix which lists Skills Center programs and proposed optional or cross-credit for each program. This matrix and samples of the various competency documents have been given to superintendents, vocational directors, principals and curriculum coordinators in each of our eleven cooperating school districts. To date we have not received blanket approval to award credit, however we are working with individual school districts for such action and approval. In a number of cases these documents have provided back-up data for cross-credit on an individual basis. It is our intent to develop similar competency documents for the other programs which have an academic component. We feel these competency documents are well done and provide a basis for requesting cross-credit and accountability for basic skills competencies.

BODY OF REPORT

A. Problem Area Toward Which Project Was Directed

Since 1983, numerous reports dealing with education have focused a major emphasis on academic skills. Across the nation, and specifically in Washington State and our local area, school districts have increased graduation requirements, making it difficult, if not impossible for many students to have time for vocational training during their high school years. For many students, the academic/college prep program is not appropriate. For those students who have selected careers which do not require a college degree, the opportunity to obtain training in high school is extremely important and should be a viable instructional program. Vocational education requires a good understanding of basic theory and applications of basic math, science and English generally specifically related to that career field. Therefore, the majority of the vocational programs include a major math, science or English component as an instructional part of their training curriculum.

It is our recommendation that consideration be given to the relevance of vocational and applied courses in fulfilling high school academic requirements through a process of cross-credit. In order to be definitive and accountable in receiving approval to grant academic credit, we must address instructional time and basic skills competencies covered in our various vocational training programs. This task is going to be critical for all of us in vocational education, especially at the secondary level, if we are to have the time necessary for effective, viable vocational training, and even more critical to keep our vocational training programs.

B. Goals And Objectives

Overall Objective: To develop a curriculum package which defines specific math, science or language arts skills which are presently being taught in each of 11 Sno-Isle Vocational Skills Center programs in order to provide justification for granting high school academic credit.

Specific Objectives Are:

1. To define specific competencies for each academic discipline being taught within individual programs, defining content, activities, references and method of evaluation.

2. To identify classroom instruction hours, instructional areas, hours of hands-on application and hours of assigned homework.

3. To have specific and defined academic competencies for students to be used as a part of each instructional program.

4. To submit for review and approval by the cooperative curriculum committee and Administrative Council to award credit at the completion of first semester, which is January, 1985.

5. To develop among academic instructors a better understanding of the basic skills competencies needed in vocational training programs.

6. By September, 1984, to complete and have available for distribution to other skills centers and vocational programs model math and competency packets for the following Sno-Isle Skills Center training programs:

    Electronics
    Construction Trades
    Drafting
    Machine Trades
    Data Processing
    Fashion Merchandising
    Medical Office
    Nursing Assisting
    Dental Assisting
    Animal Care
    Word Processing

C. Description Of The Project

Sno-Isle Vocational Skills Center is an eleven school district cooperative offering vocational training in twenty job skill areas. Eleven programs were selected initially to participate in this project. These were programs which most obviously had basic skills training components.

With the direction of the Skills Center curriculum and resource person instructors in the program gathered materials and information from other programs, student learning objectives (SLOs) in math, science and English from various school districts where available and set out developing a format and plan for meeting the project objectives. Using the selected format, instructors spent many hours going through their program curriculums to pull out and define specific competencies in an identified academic area. For each competency learning activities, instructional hours, resource/materials and evaluation were defined. Draft documents were developed and reviewed with the curriculum/resource person for input, recommendations and proposed changes. After studying revisions they were typed in final form to be submitted for dissemination. Based on the competency curriculum documents using 60 instructional hours as a basis for 1 credit a matrix was developed which proposed credit in specific basic skills competency areas with defined skills and accountability backup. This matrix with samples of the competency curriculum documents have been disseminated to superintendents, high school principles, vocational directors, district curriculum coordinators and selected academic instructors. Nearly everyone has been impressed with the various curriculum packets and the defined competencies have provided a definitive picture of basic skills competencies which are needed and are presently being taught in specific vocational training programs in preparation for career success. These documents have not only provided documentation as a basis for awarding credit, but are valuable curriculum documents for instructors for planning, instruction and evaluation. By defining competencies in a basic skill as well as job skills, each program can be accountable for achievement of skills.

D. The project has identified eleven program areas for development of basic skills competency documents. Documents, including basic skill competencies, learning activities, instructional hours, materials/resources and evaluation were completed for Electronics mathematics, Machine Trades mathematics, Fashion Merchandising mathematics and English, Medical Office science/health, Dental Assisting science/health, Veterinary Assisting science,

Automated Office Systems (W.P.) English. Construction Trades has identified the competencies, only, at this point. Documents were not completed in Drafting and Nursing Assisting because of staff resignations and new instructors being hired in September, 1984. Because of the comprehensiveness of math in Data Processing, the math competencies for that program are still in progress.

We have excellent documents which are valuable to the instructors as curriculum and planning instruments, providing a basis for evaluation of basic skills competency as well as job skills competencies. These documents also provide good documentation of competencies and instructional hours as a basis for awarding cross-credit for students in vocational programs. They have also been a resource to share and initiate communications between academic and vocational instructors.

E. Evaluation Of The Project

The project has been very successful and we have achieved the majority of our objectives. It was an excellent curriculum project for instructors which not only gave them a format for basic skills competencies but one which can be used for total curriculum planning.

At this point we have not received blanket approval for cross-credit, however a great deal of communication has taken place, there is study of the Skills Center competency documents and a process for approval has been established. With the vast technological changes, national studies and increased emphasis on academics, coordination of basic skills and vocational education can no longer be an option. Identification of the basic skills in each vocational program must be a high priority in each school district. These documents and the matrix should be of value to others as they begin this process or are seeking to plan a format for moving towards cross-credit. It is our intent to develop similar documents for basic skill areas in each of the programs at Sno-Isle Skills Center. We will continue to work with superintendents, principals and curriculum coordinators through the vocational directors in the individual school districts to be able to award cross-credit and/or optional credit for 60 instructional hours of math, science/health and/or English components in Skills Center vocational programs.

SNO-ISLE VOCATIONAL SKILLS CENTER 12/84

Proposed Optional Credit

Skills Center Course		Academic Subjects (60 instructional hours) English	Math	Science	Health	Other
Auto Mechanics	1st year		½			
	2nd year		½			
Automated Office Sys.	(1 year)	2				
Construction Trades	1st year					
	2nd year		1			
Cosmetology	(1 year)			1		
Data Processing	1st year		1			
	2nd year		1			
Dental Assisting	(1 year)			2 or 2		
Diesel Hydraulics	1st year		½			
	2nd year		½			
Drafting	1st year					
	2nd year		1			
Electronics	1st year		1½			
	2nd year		1½			
Fashion Merch.	(1 year)	1	1			
Landscaping	1st year			1		
	2nd year					
Machine Trades	1st year		1			
	2nd year		1			
Medical Office	(1 year)			2 or 2		
Nursing Assisting	(1 year)			1 or 1		
Production Plastics	1st year					
	2nd year			1		
Restaurant Opr.	1st year		1			
	2nd year					
Veterinary Assist.	(1 year)			1		
Warehouse/Inventory	1st year		1			
	2nd year					
Welding	1st year		1			
	2nd year		1			

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Sno-Isle Vocational Skills Center
84-AWD(233)NB
Defining Math and Science Competencies in Voc. Ed.

MATHEM NIST TRAINING A ILLS CENTER
MATHEMAT INIST TRAINING AN KILLS CENTER
MATHEMATI HINIST TRAINING AND SKILLS CENTER
MATHEMATIC CHINIST TRAINING AND S E SKILLS CENTER
MATHEMATICS ACHINIST TRAINING AND SN LE SKILLS CENTER
MATHEMATICS IN MACHINIST TRAINING AND SNO-ISLE SKILLS CENTER
MATHEMATICS IN MACHINIST TRAINING AND SNO-ISLE SKILLS CENTER
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MATHEMATICS IN M INSTRUCTOR SLE SKILLS CENTER
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MATHEMATICS IN MACHINIST TRAINING AND SNO-ISLE SKILLS CENTER
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MATHEMA S IN MACHINIST TRAINING AND SNO-ISLE LLS CENTER
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MATHEMATICS CURRICULUM IN MACHINIST TRAINING AT SNO-ISLE SKILLS CENTER

This outline and information package will provide justification for your highschool granting one math credit per year for the mathematics studied in machinist training at Sno-Isle. Students are required to pass competency tests at the end of each unit, and to keep note books. These notebooks will be used in their careers as a complete reference to shop math.

Machine shop training at Sno-Isle requires a great deal of mathematical education. The first year student will be learning much in basic and specific shop math while the second year student will be studying computer machining and advanced geometry and trigonometry. Machinists make many decisions every day to manufacture the products of their craft. These decisions are always mathematical.

Students learn math in three ways at Sno-Isle:

1. Linked INDIVIDUALIZED ASSIGNMENTS in their competency outline for the shop. These assigments come from texts listed in the bibliography of this catalog. Each student must complete these assignments to get credit for the competency unit with a score of 80% or better.

2. STANDARD CLASS LECTURES. These may be considered a separate, but related class to the students machinist training. These classes are vocational math and are necessary to be entry level machinists. Subjects include trigonometry, geometry, shop formulas etc.

3. SHOP EXPERIENCE This is the most powerful motivator in our math teaching at Sno-Isle. All the math the students are learning is relevent. Math has real meaning because the student sees immediate application to what he is learning. The student must learn the math skills taught in order to do the work being assigned in the shop. Students see through field trips, outside lecturers, and visiting graduates, that the math in this outline is very important and thus they pay close attention.

Students learn math better with immediate real application. Students learn their math very well in the Sno-Isle machinist program.

OUTLINE CONTENTS

SECTION

1. Introduction and rationale for math credit in Sno-Isle Machinist Program

2. Outline Contents

3. Hours spent in class and homework summary per semester.

4. Outline 7 pages

5. Bibliography of texts used

6. Appendix A - Handout for Complex Trigonometry

7. Appendix B - Handout for Metric Studies

8. Appendix C - Handout for decimal arithmetic review

9. Appendix D - Outline of Computer Machining Component

SUMMARY OF HOURS SPENT IN STRUCTURED CLASS ACTIVITIES , LAB APPLICATION AND HOMEWORK

Semester		Classroom Instruction Hours	Homework Estimated Hours	Hours Hands On Application
First Semester	1st year	33	18	20
Second Semester	1st year	33	23	15
Third Semester	2nd year	33	32	10
* Fourth Semester	2nd year	35	28	40

* This semester the student spends much of their time in the lab applying the advanced math they have learned in programming the computerized machining equipment - see pages 7 - 8

Machine Trades Mathematics
Curriculum Outline

SUBJECT - UNITS	STUDY TEXT OR MATERIALS	STUDY HOURS / HOMEWORK HOURS	ACTIVITIES * EVALUATION
FIRST SEMESTER - FIRST YEAR			
I. DECIMAL ARITHMENTIC- Review	Handout A	3 / 0	L D HA
A. Adding and Subtracting Decimals			E 1
B. Rounding and Placement of Decimal Point			U 1
C. Multiplying and Dividing Decimals			
D. Estimating Answers and Decimal Placement			
II. PRECISION CALCULATIONS FOR ACCURACY	Text Book A	4 / 4	L D HA
A. Thousandths of an Inch-(Talk Machinist)	Text Book B		E 1
B. Vernier Divisions and Scales			U 1
C. Micrometer Scales and Divisions			
D. Angular Arithmetic			
1. Degrees and Minutes-seconds			
E. Tool Applications			
III METRIC SYSTEM IN SHOP WORK	Text Book A	1 / 2	E 1
A. Units in S.I.	Handout B		U 1
B. Converting Units Within S.I.			Q 1,2,3,4,5
C. Converting units between S.I. & Imperial			
D. History of S.I	Film A		
E. Metric Tool Scales			
IV. SHOP CALCULATIONS USING CALCULATORS		3 / 2	L T HA
			Quarter Test
A. X Registery, Y Registery			
B. Clear Button, X & Y clearing			

* L=Lecture D= Demonstration T= Test E= Work Book Examination HA= Hands On Application
U= Shop Unit Q= Work Book Quiz

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SUBJECT - UNITS	STUDY TEXT OR MATERIALS	STUDY HOURS / HOMEWORK HOURS	ACTIVITIES * EVALUATION
FIRST SEMESTER - FIRST YEAR cont.			
IV. SHOP CALCULATIONS USING CALCULATORS cont.	TI-30II, or		
C. Memory	35	1 / 1	L, D, HA
1. Adding and running total in M			T 1
2. Sign Changes and subtracting from M			
3. Exchange			
4. Recall			
5. Random access and stacked memory			
D. Square and Square Root			
1. Areas of Squares	Handout	3 / 2	L, T 1
2. Pythagoreans Theorm - applications	Text C		
3. Shop Problems			
E. Standard Operations		1 / 0	L
1. Adding, Subtracting			
2. Multiplying, Dividing			
3. Powers, Constants			
4. Opperation preferences (valences			
5. Chain Operations			
F. Algebraic Operations	Textbook C	2 / 2	L, T1
1. Constants			
a. PI			
b. the K function			
2. Parenthesis			
3. Reciprocals (1/X)			
4. Reciprocal functions			
a. Scientific Notation			
b. Powers and Roots			
5. Polynomials and formulas			

Note------ The trigonometry functions will be discussed later while the student is studying trig. This applies to the DRG (degrees, radians, gradients) function too

* L=Lecture D= Demonstration T= Test E= Work Book Examination HA= Hands On Application

SUBJECT - UNITS	STUDY TEXT OR MATERIALS	STUDY HOURS / HOMEWORK HOURS	ACTIVITIES * EVALUATION
FIRST SEMESTER - FIRST YEAR cont			
IV. SHOP CALCULATIONS USING CALCULATORS cont.	Finger tip math by Texas Inst.	6 / 0	L
A. Efficiency and Accuracy			
1. Estimating your answers			
2. Reverse division using reciprocals			
3. Reverse subtraction using sign change and absolute value			
V. Shop Geometry			
A. Tool Geometry	Text A	2 / 1	D, E3, Q3,4
1. Drill Bit Angles	Chapter 1, 2		HA U2
a. Rake, positive & negative			
b. Clearance Angles and Point Angles			
2. Lathe Bit Angles	Text A	3 / 1	D, E4, Q6,7
a. Rake, positive and negative	Chapter 4, 5		HA, U3 E5
b. Clearance Angles			
c. Shear and Edge Cutting Angles			
3. Milling Tool Geometry	Text A	2 / 1	E7, Q13,14,
a. Rake, positive & negative	Chapter 6		HA, U4
b. Rake, radial & axial			
c. Clearance and Shear Angles			
B. Layout Geometry	Text A	2 / 2	U1, U2, U4
a. Drawing Scales	Text B		HA, L,
b. Full Size Layout			
c. Bisecting Lines and Angles			
d. Measuring Layouts to Prove Math Work			
e. Measuring Angles			
1. Degrees, Minutes, Seconds			
2. Vernier Protractors			
f. Radius Layout and Circular Segments			

* L=Lecture D= Demonstration T= Test E= Work Book Examination HA= Hands On Application
U= Shop Unit

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SUBJECT - UNITS	STUDY TEXT OR MATERIALS	STUDY HOURS / HOMEWORK HOURS	ACTIVITIES * EVALUATION
SECOND SEMESTER - FIRST YEAR			
VI. MATHEMATICS FOR INDUSTRY			
B. Algebra 1. Unknown Symbols 2. Algebraic Expressions 3. Determining Values of Alg. Expressions 4. Positive and Negative Numbers and Expressions a. addition, subtraction, multi, division 5. Powers and Roots 6. Solving Equations and Simplifing Formulas	Text C pg 58-91	6 / 4	L, T
C. Ratios and Proportions 1. Deffinitions and Forms (ratio) 2. Terms and applications a. direct ratio b. inverse ratio 3. Proportions 4. Ratio and Proportion Shop Applications	Text C pg 92-141	4 / 2	L, T, D-3
D. Gears, Pulleys 1. Simple systems 2. Compound calculations			
E. Geometry 1. Construction Methods a. Bisecting and angle b. Bisecting a line c. Drawing a perpendicular to a line d. Construction of parallel lines through points e. Constructing angles f. Drawing regular geometric shapes	Text C pg 142-183 Handout D	3 / 2	L, D, HA T
2. Theorms in Layout			

* L=Lecture D= Demonstration T= Test E= Work Book Examination HA= Hands On Application

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SUBJECT - UNITS	STUDY TEXT OR MATERIALS	STUDY HOURS / HOMEWORK HOURS	ACTIVITIES * EVALUATION

SECOND SEMESTER First Year cont.

F.	Plane Trigonometry	Text C pg 232- 291	20 / 15	L, D, HA
	1. Trig Ratios - What are they?	Class Lectures		T
	a. The Six Ratios and Triangles			
	b. Reciprocal Ratios (functions)			
	2. Finding Unknown Angles	Class Handouts		
	a. Knowing Two Sides and a right angle	Machinery's Handbook		
	b. Trig Tables - Explained			
	c. Solve using tables			
	d. Calculator solutions			
	e. Decimal Conversion from D.M.S. (interpolation)			
	3. Finding Unknown Side From Given Side and Angle			
	a. Using Trig Tables			
	b. Using Calculator			
	c. Shop Applications			
	4. Shop Applications			
	a. Sine Bars and Precision Angles			
	b. Central Angle Problems			
	1. Bolt Circles			
	2. Isosceles Triangles			
	c. Tapers in Machinist Work			
	d. Shop Problems			

* L=Lecture D= Demonstration T= Test E= Work Book Examination HA= Hands On Application
U= Shop Unit O= Work Book Quiz

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SUBJECT - UNITS	STUDY TEXT OR MATERIALS	STUDY HOURS / HOMEWORK HOURS	ACTIVITIES * EVALUATION
FIRST SEMESTER - Second Year cont			
IX SHOP COMPLEX TRIGONOMETRY-GEOMETRY cont C. Complex Solution Methodology 1. Direct Solution Path 2. Solvability Test for Complex Problems 3. Unknown Zone 4. Resolution (part of a greater quantity) 5. Transference (moving information to the problem area) 6. Progression (sub-set of transference) 7. Accurate Scale Layout	Activity Packet C see appendix	3 / 1	T, HA Solution of packet problems accuracy .0001"
D. Shop Application Problems	Activity Packet C	8 / 10	as above
SECOND SEMESTER - Second Year			
I. COMPUTER PROGRAMMED MACHINE TOOLS A. Machine Axis' 1. X , Y, Z 2. Auxilary A, B, C axis B. Coordinate Systems 1. Cartesian a. Absolute Value Point Identifications b. Incremental - Relative Identifications 2. Polar Coordinates a. Radius & Angle b. Absolute and Relative Angles c. Absolute and Relative Radii	Activity Packet D	35 / 5	Activities

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* L= Lecture D= Demonstration T= Test E= Work Book Examination HA= Hands On Application
U= Shop Unit O= Work Book Quiz

SUBJECT - UNITS	STUDY TEXT OR MATERIALS	STUDY HOURS / HOMEWORK HOURS	ACTIVITIES * EVALUATION
SECOND YEAR - first semester			
VIII MACHINING FORMULAS	Book A	2 / 1	HA, L, D
A. Speeds and Feeds			U 3, U 4
1. RPM Formulas Variables			E 3, E 4, E 7
a. Tool Alloy			
b. Material Alloy			
c. Full PI Formula			
d. Abreviated Formula			
2. Feed Rates			
a. Turning			
b. Milling			
c. Drilling			
3. Calculation Methods			
a. Charts			
b. Formulas			
c. Dedicated Slide Rules			
IX SHOP COMPLEX TRIGONOMETRY-GEOMETRY	Activity Packet B	20 / 20	HA, T, L
A. Sketching Problems			Daily Homework
1. Accuracy			
2. Recording and Checking Answers			
3. Tools Needed			
4. Terms			
B. Geometry Terms			
1. Rule 1- Lines intersecting			
2. 2- Parallel lines cut by transversal			
3. 3- Angle tangent to radius-two legs			
4. 4- Tangent point rule			
5. 5- Right leg, left leg - equal angle proof			
6. 6- Double tangent circles - line drawn center to center			
7. 7- Circular segments			
8. 8- Double tangent point rule			

* L=Lecture D= Demonstration T= Test E= Work Book Examination HA= Hands On Application
U= Shop Unit Q= Work Book Quiz

SUBJECT - UNITS	STUDY TEXT OR MATERIALS	STUDY HOURS / HOMEWORK HOURS	ACTIVITIES * EVALUATION

II. WRITING PROGRAMS

A. Tool Path - Dimensional Calculations

B. Tool Radius Compensation

C. Program Flow
   1. Loops
   2. Subroutines
   3. Nested Subroutines
   4. Fixed cycles
   5. Repeat Skips

D. Angular Callouts
   1. In Cartesian
   2. In Polar

E. Sign Change Cycles
   1. Mirror Image
   2. Symmetrical Geometries

F. Program Scaling Factors.

G. Program Foremats
   1. Conversational Software
   2. EIA Coded Input Software

H. On and Offline Programming
   1. MDI- Manual Data Insert
   2. Computers
   3. Data Storage
      a. Punched Tape
      c. Computer Disk
      d. Magnetic Tape
      e. Hard Copy Printouts

CNC - Core Text D

Note, these activities and evaluation are listed in the text.

* L=Lecture D= Demonstration T= Test E= Work Book Examination HA= Hands On Application
U= Shop Unit Q= Work Book Quiz

ENGLISH FUNDAMENTALS INCLUDED IN FASHION MERCHANDISING CURRICULUM AT SNO-ISLE VOCATIONAL SKILLS CENTER

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
FIRST SEMESTER				
I. CAREERS IN RETAILING				
A. Self Analysis 1. Identify skills 2. Clarify values	Lecture Worksheets Interview	5	Text A Handouts	Quiz Worksheet Scores
B. Goal Setting 1. Project future plans				Complete individual interview
C. Job Awareness 1. Write interview questions 2. Conduct interview				
II. INTRODUCTION TO FASHION				
A. Fall and Spring Forecast 1. Written description of ten topics.(Analyze current season; project spring)	Lecture Worksheets Group Activities	7.5	Text A Classroom periodicals Handouts	Quiz Workshop Scores Complete forecast assignment
B. Define New Fashion Terms				
C. Familiarization With Fashion Resources 1. Review in written form each classroom periodical: WWD, W, GQ, Glamour, Mademoiselle, Vogue				

ENGLISH FUNDAMENTALS INCLUDED IN FASHION MERCHANDISING CURRICULUM

AT SNO-ISLE VOCATIONAL SKILLS CENTER

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
III. COMMUNICATIONS				
A. Media Message Workshops	Worksheets	15	Classroom periodicals	Worksheet Scores
1. Ongoing weekly assignment on analysis of article on activity of fashion interest.	Oral Presentation		Television, Radio, Special Events	Presentation Evaluation
IV. ADVERTISING FUNDAMENTALS				
A. Headlines and Subheads	Worksheets	10	Text A	Quiz
1. Be able to identify in an ad.	Lecture		Handouts	Worksheet Scores
2. Write with clarity, legibility, accuracy and attention to detail.	Group Activities		Classroom periodicals	Complete Ad
	Application in Store			
B. Copy				
1. Be able to identify good copy in an ad.				
2. Write descriptive copy with clarity, legibility, accuracy and attention to detail.				
C. Logo Types and Slogans				
1. Be able to identify in an ad.				
D. Publicity				
1. Write a press release on a store promotion.				

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ENGLISH FUNDAMENTALS INCLUDED IN FASHION MERCHANDISING CURRICULUM

AT SNO-ISLE VOCATIONAL SKILLS CENTER

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
SECOND SEMESTER				
V. FEDERAL TRADE COMMISSION REGULATIONS A. Research an FTC Topic B. Write Report (3-5 pages) C. Participate in panel presentation 1. Orally present information accurately	Lecture Written Report Oral Panel Presentation	10	Library Classroom Files Filmstrips Handouts Government Published Pamphlets Classroom Reference Books	Quiz Panel Evaluation Report Evaluation
VI. FASHION SHOW PRESENTATION A. Theme 1. Write theme and slogan B. Publicity 1. Write press release 2. Write sign copy C. Programs 1. Identify pertinent information 2. Write descriptive copy D. Commentary 1. Write descriptive copy All of the above to be written with identification, clarity, legibility, accuracy and attention to detail.	Worksheets Lecture Group Activities Application in Store	7.5	Handouts Classroom Reference Books	Worksheet Score Completion of Fashion Show Program Evaluation Commentary Evaluation

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ENGLISH FUNDAMENTALS INCLUDED IN FASHION MERCHANDISING CURRICULUM

AT SNO-ISLE VOCATIONAL SKILLS CENTER

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
VII. FASHION DESIGNERS A. Write Research Report B. Define French Fashion Terms	Lecture Speakers Written Report Oral Presentation Worksheets	15	Library Handouts Classroom Reference Books Classroom Designer Files Classroom Periodicals	Oral Presentation Evaluation Complete Written Reports Worksheet Scores
VIII. FASHION HISTORY A. Research a Period of History 1. Complete a Written Worksheet B. Define Historical Fashion Terms	Lecture Speakers Worksheets Oral Presentation	10	Library Handouts Classroom Reference Books Contact Senior Citizens	Worksheet Scores Oral Presentation
		80 hours		

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SNO-ISLE SKILLS CENTER FASHION MERCHANDISING

BIBLIOGRAPHY OF CLASSROOM TEXTS

1. Text A: Apparel and Accessories, McGraw-Hill

CLASSROOM PERIODICALS

WWD	=	Women's Wear Daily	-- Daily Publication
"W"	=	Women's Wear Daily	-- Weekly Publication
GQ	=	Gentleman's Quarterly	-- Monthly Publication
		Glamour	-- Monthly Publication
		Mademoiselle	-- Monthly Publication
		Vogue	-- Monthly Publication

84-AWD(233)NB

MATHEMATICS INCLUDED IN FASHION MERCHANDISING CURRICULUM AT SNO-ISLE VOCATIONAL SKILLS CENTER

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
FIRST SEMESTER				
1. MATH REVIEW A. Adding Columns B. Percentages C. Decimals	Pre-test Lecture Worksheets	5	Text B Handouts	Quiz Worksheet Scores
2. WORKING WITH MONEY A. Identifying Coins & Currency B. Addition, Subtraction of Decimals	Worksheets Lecture Application in Store	2.5	Text B Handouts	Quiz Worksheet Scores
3. MAKING CHANGE A. Counting Coin and Currency B. Addition, Subtraction of Decimals	Lecture Worksheets Simulation in Class Application in Store	4	Handouts Money	Quiz Observation Worksheet Scores
4. RETAIL PAPERWORK A. Completing the Sales Slip Addition, Subtraction, Decimals Calculating Discounts by Percentage Use of Sales Tax Chart B. Extending Quantities Multiplication of Decimals C. Calculating Sales Tax Use of Sales Tax Chart Converting Percentages to Decimals Multiplication of Decimals D. Calculating Discounts Using Percentages Subtraction of Decimals	Worksheets Lecture Application in Store	5	Handouts Text B	Quiz Worksheet Scores Observation

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
FIRST SEMESTER (cont'd)				
5. RETAIL STOCK CONTROL				
A. Receiving Merchandise Adding Whole Numbers Adding Decimals	Lecture Worksheets Application in Store	10	Handouts Merchandise Examples	Observation Term Quiz Student Recheck Store Balance
B. Taking Physical Inventory Counting Units Adding Whole Numbers				
C. Calculating Book Inventory Addition, Subtraction Whole Numbers Multiplication of Decimals				
D. Calculating Markdowns Use of Percentages Subtraction of Decimals				
E. Calculating Consignment Payment Use of Percentages Multiplication of Decimals Addition, Subtraction of Decimals				
6. REGISTER OPERATIONS				
A. Opening The Register Counting Coin and Currency Addition of Decimals	Lecture Worksheets Application in Store	8	Handouts	Observation Term Quiz Student Re-check Store Balance
B. Closing the Register Counting Coin and Currency Addition of Decimals Multiplication of Whole Numbers				
C. Auditing the Register Counting Coin and Currency Addition of Decimals Multiplication of Whole Numbers Addition of Columns Subtraction of Whole Numbers				

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SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
REGISTER OPERATIONS (cont'd)				
D. Completing Layaways Addition of Decimals Using Tax Tables Using Percentages to Calculate Down Payments Subtraction of Decimals				
E. Calculating Employee Discounts Use of Percentages Subtraction of Decimals				
F. Calculating Exchanges Addition and Subtraction of Decimals Use of Tax Tables				
7. PERSONNEL OPERATIONS				
A. Calculating Payroll Addition, Subtraction, Multiplication of Decimals Use of Percentages Use of IRS Tax Charts Use of Social Security Charts	Lecture Worksheets Application in Store	5	Handouts	Observation Quiz Worksheet Scores
B. Planning Work Schedules Addition of Hour Totals				
C. Calculating Sales Per Hour Costs Calculating Averages				
D. Calculating Selling Costs Utilizing Algebraic Costs Use of Percentages				

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
FIRST SEMESTER (cont'd)				
8. ADVERTISING OPERATIONS A. Calculating Ad Dimensions Measurement of Space Figuring Square Footage B. Calculating Ad Costs Figuring Square Footage Multiplication of Decimals	Lecture Worksheets Speaker from Local Newspaper Application in store	2.5	Handouts Text A	Quiz Worksheet Scores Observation

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
SECOND SEMESTER				
9. MERCHANDISING OPERATION A. Estimating Buying Budget Addition of Whole Numbers Use of Percentages Comparison of Quantities For Decision Making, Estimation	Lecture Worksheets Field Trip to Buying Office Speaker - Buyer Application in Store	20	Handouts Text A Text B Merchandise Examples	Quiz Observation Worksheet Scores
B. Completing Purchase Order Utilizing Algebraic Formula Division of Decimals Multiplication of Decimals Addition of Columns				
C. Planning Sales Goals Use of Percentages Comparison of Quantities for Decision Making, Estimation				
D. Calculating Sales Totals Addition of Columns, Decimals				
E. Calculating Year-To-Date Figures Addition of Decimals Use of Percentages				
F. Calculating Turnover Computing Averages Use of Percentages				
G. Calculating Gross Sales Addition of Columns				
H. Calculating Net Sales Addition of Columns Subtraction of Whole Numbers				

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SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
SECOND SEMESTER (Cont'd)				
Merchandising Operation (Cont'd)				
I. Determining Fashion Cycle Graph Reading Graph Curve				
J. Interpreting Data Processing Reports Comparison of Numbers, Percentages				
K. Calculating Open-To-Buy Utilizing Formula Addition and Subtraction of Whole Numbers				
L. Calculate Daily Sales Records Addition and Subtraction of Decimals Use of Percentages				
10. BUSINESS OPERATION				
A. Calculating Retail Prices Multiplication of Decimals Addition of Columns	Handouts Lecture Speaker-Store-Owner	18	Text C Handouts	Project Score Quiz Observation
B. Calculating Square Footage of Store Square Footage Figures Multiplication of Decimals	Facility			
C. Calculating Business Tax Payments Reading IRS Tax Charts Reading Social Security Tax Charts Addition and Subtraction of Decimals				
D. Figuring Supply Costs Multiplication of Decimals Addition of Columns				

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
BUSINESS OPERATION (Cont'd)				
E. Figuring Equipment Costs Multiplication of Decimals Addition of Decimals				
F. Planning Personal Budget Addition of Columns Subtraction of Whole Numbers				

BIBLIOGRAPHY OF TEXTS USED IN FASHION MERCHANDISING

1.	Text A	Apparel and Accessories	McGraw Hill
2.	Text B	Merchandising Math	McGraw Hill
3.	Text C	Decisions In Starting A Retail Business	FLM Publications

ANATOMY, PHYSIOLOGY AND TERMINOLOGY
TAUGHT IN MEDICAL OFFICE ASSISTING CURRICULUM
AT SNO-ISLE VOCATIONAL SKILLS CENTER

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES **	EVALUATION
1. THE BODY AS A WHOLE				
A. Identify body cavities and organs within each (spinal, pelvic, etc.)	Lecture/Demonstration Class Discussion Flash Cards	5	LM, Ch 3	Test (75% Review Exercises (S/U)
B. Describe anatomical and clinical divisions of the abdomen (e.g., hypo-gastric) and back (e.g., lumbar)				
C. Define positions, directions and planes of the body.				
D. Identify body systems (digestive, urinary, etc.) and organs and structures within them.				
E. Define word elements, terms and abbreviations relating to A-D.				
2. DIGESTIVE SYSTEM				
A. Identify organs and structures (stomach, liver, etc.) and their functions.	Lecture/Demonstration Class Discussion Flash Cards	10	LM, Ch. 5-7	Test (75%) Review Exercises (S/U)
B. Describe pathological conditions (colitis, cirrhosis, etc.)				
C. Describe clinical procedures (UGI, etc.)				
D. Define word elements, terms and abbreviations.				

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** See code on page 9

ANATOMY, PHYSIOLOGY AND TERMINOLOGY
TAUGHT IN MEDICAL OFFICE ASSISTING CURRICULUM
AT SNO-ISLE VOCATIONAL SKILLS CENTER

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATIONS
3. URINARY SYSTEM A. Identify organs and structures (bladder, urethra, etc.) and their functions	Lecture/Demonstration Class Discussion Flash Cards	10	LM, Ch 8	Test (75%) Review Exercises (S/U)
B. Describe pathological conditions (pyelonephritis, incontinence, etc.)				
C. Explain purpose and interpretation of urinalysis (pH, ketone bodies, etc.)				
D. Define clinical procedures (IVP, dialysis, etc.)				
E. Define word elements, terms and abbreviations.				
4. FEMALE REPRODUCTIVE A. Identify organs and structures (uterus, ovary, etc.) and their functions.	Lecture/Demonstration Class Discussion Flash Cards	5	LM, Ch. 9	Test (75%) Review Exercises (S/U)
B. Explain functions and interactions of hormones (e.g. progesterone)				
C. Describe pathological conditions (endometriosis, fibroids, etc.)				
D. Define clinical procedures (Pap test, conization, etc.)				
E. Define word elements, terms and abbreviations.				

ANATOMY, PHYSIOLOGY AND TERMINOLOGY
TAUGHT IN MEDICAL OFFICE ASSISTING CURRICULUM
AT SNO-ISLE VOCATIONAL SKILLS CENTER

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATIONS
5. MALE REPRODUCTIVE A. Identify organs and structures (epididymis, vas deferens, etc.) B. Describe pathological conditions (phimosis, hydrocele, etc.) C. Define clinical procedures (Turp, vasectomy, etc.) D. Define word elements, terms and abbreviations	Lecture/Demonstration Class Discussion Flash Cards	5	LM, Ch 10	Test (75%) Review Exercises (S/U)
6. NERVOUS SYSTEM A. Identify organs and structures (brain, spinal cord) and their functions B. Describe pathological conditions (epilepsy, spinabifida, etc.) C. Define clinical procedures (lumbar puncture, CAT scan, etc.) D. Define word elements, terms and abbreviations	Lecture/Demonstration Class Discussion Flash Cards	5	LM, Ch 11	Test (75%) Review Exercises (S/U)

ANATOMY, PHYSIOLOGY AND TERMINOLOGY
TAUGHT IN MEDICAL OFFICE ASSISTING CURRICULUM
AT SNO-ISLE VOCATIONAL SKILLS CENTER

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATIONS
7. CARDIOVASCULAR SYSTEM A. Identify organs and structures (heart, artery, etc.) and their functions. B. Describe pathological Conditions (arrhythmias, MVP, etc.) C. Define clinical procedures (stress test, EKG, etc.) D. Define word elements, terms and abbreviations	Lecture/Demonstration Class Discussion Flash Cards	5	LM, Ch 12	Test (75%) Review Exercises (S/U)
8. RESPIRATORY SYSTEM A. Identify organs and structures (lungs, pharynx, etc.) and their functions. B. Describe pathological conditions (asthma, emphysema, etc.) C. Define clinical procedures (bronchoscopy, tracheostomy, etc.) D. Define word elements, terms and abbreviations.	Lecture/Demonstration Class Discussion Flash Cards	5	LM, Ch 13	Test (75%) Review Exercises (S/U)

ANATOMY, PHYSIOLOGY AND TERMINOLOGY
TAUGHT IN MEDICAL OFFICE ASSISTING CURRICULUM
AT SNO-ISLE VOCATIONAL SKILLS CENTER

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATIONS
9. BLOOD AND LYMPHATIC SYSTEMS A. Describe the compcsition, formation & function of blood and lymph. B. Differentiate blood types and their use. C. Describe pathological conditions (hemophilia, leukemia, etc.) D. Define clinical procedures (CBC, prothrombin time) E. Define word elements, terms and abbreviations.	Lecture/Demonstration Class Discussion Flash Cards	10	LM, Ch. 14	Test (75%) Review Exercises (S/U)
10. MUSCULOSKELETAL SYSTEM A. Identify structures and functions (long bones, tendons, etc.) B. Describe pathological conditions (muscular dustrophy, fractures, etc.) C. Define clinical procedures (arthroscopy, EMG, etc.) D. Define word elements, terms and abbreviations.	Lecture/Demonstration Class Discussion Flash Cards	5	LM, Ch 15	Text (75%) Review Exercises (S/U)

ANATOMY, PHYSIOLOGY AND TERMINOLOGY
TAUGHT IN MEDICAL OFFICE ASSISTING CURRICULUM
AT SNO-ISLE VOCATIONAL SKILLS CENTER

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATIONS
11. PHARMACOLOGY A. Explain 3 types of drugs. B. Define 5 schedules of controlled substances C. Describe methods of medication administration (IV, IM, etc.) D. Define word elements, terms and abbreviations.	Lecture/Demonstration Class Discussion Flash Cards	10	LM, Ch 21 AMA, Ch 12	Test (75%) Review Exercises (S/U)
12. CLINICAL/PRACTICAL APPLICATIONS*-- Use knowledge of anatomy, physiology, and medical terminology to perform: A. Receptionist Duties 1. Screen and triage patient phone calls and questions. 2. Determine appointment needs (types, times, etc.) 3. Document phone calls. 4. Schedule patients for clinical procedures and hospitalization. 5. Screen and document prescription refill requests.	Lecture/Demonstration Class Discussion Simulations	5	AMA, Ch 3-5, 12 LM, Ch 21	Simulation (80%) Exercises Model Office (role playing)

* Within the total Medical Assisting course, approximately 250 hours is spent learning and using clerical and administrative skills needed by an administrative medical assistant. The competencies and hours listed in 12. Clinical/Practical application consist of that portion which necessitates and demonstrates knowledge of anatomy, physiology and medical terminology.

ANATOMY, PHYSIOLOGY AND TERMINOLOGY
TAUGHT IN MEDICAL OFFICE ASSISTING CURRICULUM
AT SNO-ISLE VOCATIONAL SKILLS CENTER

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATIONS
12. CLINICAL/PRACTICAL APPLICATIONS (Cont'd)				
B. Medical Records				
1. Interpret, organize and file various medical reports and records.	Lecture Class Discussion Simulations Transcription Tapes	25	AMA, Ch 6, 7, 9	Simulation (80%) Exercises Transcription (85% Model Office
2. Abstract information from patients' charts.				
3. Translate medical abbreviations used by medical personnel (physicians, technicians, etc.)				
4. Transcribe medical dictation including consultations, various hospital reports and history and physicals.				
C. Medical Billings				
1. Translate and code medical services, procedures and diagnosis.	Lecture Class Discussion Simulations	15	AMA, Ch 13, 15 CPT ICD IH Computerized Billing System	Test Coding (75%) Simulations Model Office
2. Abstract needed information from medical reports.				
3. Complete various third-party forms (billing forms, disability reports, etc.)				

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ANATOMY, PHYSIOLOGY AND TERMINOLOGY
TAUGHT IN MEDICAL OFFICE ASSISTING CURRICULUM
AT SNO-ISLE VOCATIONAL SKILLS CENTER

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATIONS
C. Medical Billing (cont'd)				
4. Communicate with referring physicians, hospitals and third parties (e.g. Medicare) concerning patient billing and health status.				
5. Utilize computerized system to process patient and third-party billings.				
		Total Hours 120		

MEDICAL OFFICE ASSISTING PROGRAM
SNO-ISLE VOCATIONAL SKILLS CENTER

MATERIALS/RESOURCES CODE

I. Student Textbooks

LM - Language of Medicine, 2nd Edition, Davi-Ellen Chabner, 1981, W.B. Saunders

AMA - Administrative Medical Assisting, Marilyn Takahashi Fordney, CMA-AC, CMT, 1982, John Wiley & Sons, Inc.

IH - Insurance Handbook For The Medical Office, Fordney, 1981 W. B. Saunders

II. Student References

ICD - International Classification Of Diseases, 9th Edition

CPT - Current Procedural Terminology, 4th Edition

III. Other Resources (used periodically throughout the course by teacher and/or students)

Gray's Anatomy, Henry Gray, 1977, Crown Publishers

"Chick Notebook Charts", Caroline House Publishers

MATHEMATICS
TAUGHT IN METAL FABRICATION SHOP
AT SNO-ISLE VOCATIONAL SKILLS CENTER

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
A. WHOLE NUMBER ARITHMETIC 1. Addition 2. Subtraction 3. Multiplication 4. Division	1. Classroom lecture 2. Chapter #1, Text #1 3. Worksheet for Chap. 1 4. Hands-on Shop Work	3	1. Practical Problems in Math for Welders by Frank R. Schell, Bill J. Matlock	Written exam. Pass with 80% Accuracy
B. ARITHMETIC OF FRACTIONS 1. Addition 2. Subtraction 3. Multiplication 4. Division 5. Working with Mixed Numbers 6. Conversion of Fractions to Decimals	1. Classroom lecture 2. Chapter #2, Text #1 3. Worksheet for Chap. 2 4. Hands-on Shop Work	8	1. Practical Problems in Math for Welders (above)	Written exam. Pass with 80% Accuracy
C. ARITHMETIC OF DECIMALS 1. Addition 2. Subtraction 3. Multiplication 4. Division 5. Conversion of Decimals to Fractions	1. Classroom lecture 2. Chapter #3, Text #1 3. Worksheet for Chap. 3 4. Hands-on Shop Work	8	1. Practical Problems in Math for Welders (above)	Written exam. Pass with 80% Accuracy
D. PLANE GEOMETRY 1. Angle Facts 2. Angle Measurement 3. Plane Figures (area, perimeter) a. Squares b. Rectangles c. Parallelograms d. Trapezoids e. Triangles f. Polygons g. Circles	1. Classroom lecture 2. Chap. 6, Text #1 3. Worksheet for Chap. 6 4. Chap. 7, Text #1 5. Worksheet for Chap. 7 6. Instructor Demonstration 7. Hands-on Shop Work 8. Chapter 1, Text 2 9. Worksheet for Chap. 1, Text 2	20	1. Practical Problems in Math for Welders (above) 2. The Pipe Fitters Handbook by Thomas Frankland	Written exam. Pass with 80% Accuracy Practical Test Pass with 80%

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MATHEMATICS
TAUGHT IN METAL FABRICATION SHOP
AT SNO-ISLE VOCATIONAL SKILLS CENTER

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
E. DIRECT MEASUREMENT 1. Terms associated with measurement 2. Feet, inches, fractions 3. Feet, decimal fractions 4. Rounding measurements	1. Classroom lecture 2. Chapter 5, Text 1 3. Worksheet for Chap. 5, Text 1 4. Hands-on Shop Work	4	1. Practical Problems (above)	Written exam. Pass with 80%
F. MEASURING TOOLS 1. Framing Square 2. Steel Rule 3. 6 Ft. Folding Rule 4. Tape Measure 5. Compass 6. Protractor 7. Dividers 8. Wrap Around	1. Classroom lecture 2. Instructor Demonstrations 3. Hands-on Shop Work 4. Worksheet on Framing Square 5. Worksheet on Wrap Around	24	2. Pipefitters Handbook (above) 3. Mid-America Vocational Consortium & Curriculum	1. Written exam. on Framing Square Pass with 80% 2. Instructor evaluation of use of tools "on the job" pass or fail

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APPLIED MATHEMATICS FOR TRAINING IN ELECTRONICS TECHNOLOGY

SNO-ISLE VOCATIONAL SKILLS CENTER

Larry J. Bonar
Instructor

1984-1985

Academic Cross Credit for Skills Center Programs

MATHEMATICS CURRICULUM IN ELECTRONICS TECHNOLOGY TRAINING AT SNO-ISLE SKILLS CENTER.

The contents of the following outline provide the basis for high schools to grant students a minimum of one math credit per year of electronics training at the Sno-Isle Skills Center.

The electronics program at Sno-Isle is designed to prepare students for further technical training at community colleges and engineering studies at four year universities, as well as preparation for technical job placement.

The study of electronics embraces three general disciplines of emperical study and observation; mathematics, physics, and chemistry. Principles of emperical logic are also utilized in the second year of the course for computer applications.

In order for students to gain a useful knowledge of electronics, they must be able to explain electronic theory and actual circuit performance in terms of mathematical principles and concepts. The entire structure of understanding eletronics is based therefore on competency in applied mathematics.

Learning Tree of Applied Mathematics for Sno-Isle Students:

1. Standard Lecture: each lesson is introduced and outlined by the instructor. Electronic theory and math applications are explained for analysis/synthesis of the subject under discussion. Students take notes on all lectures. Discussions include number systems, principles of algebra, trigonometry, geometry and calculus.

2. Individualized Assignments: each electronic mini-module is accompanied by a student worksheet for each topic that is introduced. The homework lessons themselves are comprised of 75% mathematics content which is used to explain their analysis of the assigned problems. Students must achieve an 80% competency in order to be certified for each module of the curriculum.

3. Laboratory Applications: each lab packet provides the student the opportunity to construct actual electronic circuitry, take readings with electronic instruments of various electrical values, and compare their observations with mathematical computations they have made, and derive an explanatory conclusion for differences which occur. The laboratory experience gives the students a first-hand illustration of the difficulties they will encounter in analyzing actual circuit problems in the field.

APPLIED MATHEMATICS FOR TRAINING IN ELECTRONICS TECHNOLOGY

Sno-Isle Vocational Skills Center

SUMMARY OF HOURS FOR HOURS SPENT IN STRUCTURED CLASS ACTIVITIES, HANDS ON LABORATORY, AND HOMEWORK.

Semester	Year	instructional hours	homework hours	laboratory
First	1	36	33	33
Second	1	60	69	54
Third	2	36	37	26
Fourth	2	65	53	48

INTERPRETIVE KEY FOR EVALUATION AND ACTIVITIES COLUMN

L	LECTURE
D	INSTRUCTOR DEMONSTRATION
WS	INDIVIDUALIZED WORKSHEET
Q	QUIZ
T	TEST
HO-(number)	HANDS-ON LAB HOURS

MATHEMATICS CURRICULUM

FIRST SEMESTER - FIRST YEAR

ELECTRONIC TECHNOLOGY MATHEMATICS CURRICULUM OUTLINE.

SUBJECT - UNITS	TEXT/MATLS	CLASS/ HOMWORK HRS	EVAL/ACTIVITY
FIRST SEMESTER -FIRST YEAR			
1. THE NUMBER SYSTEM: Intro/review a. real numbers b. rational numbers c. integers d. irrational numbers e. working with absolute values	TX (A) CH 2 handout #1	2/1	L/D/WS/Q
2. BASIC ALGEBRAIC TERMS a. numerical and literal coefficients;product;sum;subtrahend addend;exponent;quotient;formula algebraic expression;factor; etc.	TX (A) glossary handout #2	2/1	L/D/WS/Q
3. THE IDENTITY EQUATION a. unconditional equality b. how to write and recognize an identity equation. c. application with ohms law,solving for one unknown. d. applying mathematical symbols for use in electronic problems.	TX (A) CH 7 TX (B) CH 2 handout #3	2/1	L/D/WS/Q CH/HO-4
4. EXPONENTS AND POWERS a. definition of b. whole number exponents c. fractional exponents d. raising values to a power e. the relation ship of exponents and roots. f. adding,subtracting, multiplying, dividing, and taking the root of exponents and powers.	TX (A) CH 6 TX (B) CH 3 TX (C) CH 20 handout #4	6/6	L/D/WS/Q CH/HO-4
5. SQUARE ROOTS a. extracting the square root of a number. b. defining the radical sign. c. multiplying,dividing,squaring with radicals.	TX (A)/(B)/(C) (same as above) handout #5		L/D/WS/Q CH/T/HO-1

ELECTRONIC TECHNOLOGY MATHEMATICS CURRICULUM OUTLINE.

SUBJECT - UNITS	TEXT/MATLS	CLASS/ HMWORK HRS	EVAL/ACTIVITY
FIRST SEMESTER -FIRST YEAR (con't)			
6. METRIC PREFIXES a. counting in metric values b. metric terminology c. metric notation, use of prefixes with electronic values	TX (B) CH 3 TX (C) CH 10 handout #6	4/3	L/D/WS/CH/Q HO-3
7. Scientific Notation a. base ten numbering system b. exponential representation of decimal placement. c. adding, subtracting, multiplication division, and square root. d. raising power to a power, and other functions of exponentiation.	TX (B) CH 3-4 TX (C) CH 10 handout #7	6/4	L/D/WS/CH/Q HO-3
8. Merging Metric Prefixes/Scientific Notation. a. converting base 10 to metric. b. converting metric to base 10 c. interpreting electronic component values from base 10 to metric form.	TX (B) CH 5-6 TX (C) CH 7	2/1	L/D/WS/CH/T HO-9
9. MONOMIALS/POLYNOMIALS a. distinguish between monomials binomials, trinomials, polynomials. b. recognize & combine like terms c. add, subtract, multiply, divide, square, square root of polynomials d. manipulate and solve for one or more unknown variables.	TX (A) CH 3 TX (C) CH 4 handout #8	6/6	L/WS/CH/Q
10. SPECIAL PRODUCTS AND FACTORING a. express numbers or algebraic expressions as products of prime factors. b. square, multiply, divide factors c. factor linear algebraic expressions d. recognize principal square root of monomials. e. find product of binomials by inspection f. factor trinomials and polynomials g. recognize perfect square expressions.	TX (A) CH 4 TX (C) CH 10 handout #9	3/5	L/D/WS/CH/Q

ELECTRONIC TECHNOLOGY MATHEMATICS CURRICULUM OUTLINE.

SUBJECT - UNITS	TEXT/MATLS	CLASS/ HMWORK HRS	EVAL/ACTIVITY
FIRST SEMESTER - FIRST YEAR (con't)			
11. Calculator Math	Texas Inst	3/5	L/D/WS/
a. standard arithmetic operations	TX (B) CH 4-5		HO-9
b. mixed calculations, constants, repetitive functions.	TX (D) CH 10-11 handout #10		SEM TEST
c. Scientific notation			
d. reciprocals, squares, square roots.			
e. memory: store; add to; recall; stack function.			

*Note: other calculator math functions are introduced throughout the curriculum in each applicable lesson, especially in alternating current (A.C.) theory, involving complex trigonometric functions, and natural and common logarithims.

*Note: This particular module is taught from week (3) of the first semester throughout the end of the fourth semester, as an integral part of each text chapter.

CONCLUSION OF FIRST SEMESTER -FIRST YEAR.

MATHEMATICS CURRICULUM

SECOND SEMESTER - FIRST YEAR

ELECTRONIC TECHNOLOGY MATHEMATICS CURRICULUM OUTLINE.

SUBJECT - UNITS	TEXT/MATLS	CLASS/ HM/WORK HRS	EVAL/ACTIVITY
SECOND SEMESTER -FIRST YEAR			
12. ALGEBRAIC FRACTIONS a. evaluate, recognize, convert equivalent fractions. b. work with reciprocal functions. c. reduction to simplest terms. d. multiply, divide, add, subtract algebraic fractions e. simplify complex fractions from mixed expressions.	TX (A) CH 5 TX (C) CH 11	6/6	L/D/WS/Q HO-10
13. LINEAR AND FRACTIONAL EQUATIONS a. solve by inspection; inverse operations with addition, subtraction, multiplication, and division. b. solve equations where unknown appears in both members. c. manipulate formula to solve for unknown variables. d. simplify linear/fractional equations, and formulas having singular and multi-grouping parentheses and brackets.	TX (A) CH 7 TX (C) CH 12 TX (B) CH 6-7 TX (D) CH 8-10	9/9	L/D/WS HO-14
14. INTRODUCTION TO TRIGONOMETRY a. define terms: acute, obtuse, complementary, supplementary angles. b. recognize generation of angles: standard position of angles. c. define vertex angle, initial and terminal sides of a triangle. d. label positive and negative angles in quadrant system. e. angular measurement: define right angle and the circular (natural system) f. identify and label angle Theta/Phi of an acute angle in all quadrants. g. define radians (rads) and relarionship of Pi functions for natural system. h. convert degrees to rads, and rads to degrees.	TX (C) CH 23 TX (E) CH 3-7	9/12	L/D/WS/Q HO-5

ELECTRONIC TECHNOLOGY MATHEMATICS CURRICULUM OUTLINE.

SUBJECT - UNITS	TEXT/MATLS	CLASS/ HMWORK HRS	EVAL/ACTIVITY
15. THE RIGHT TRIANGLE. a. state pythagorean theorem b. define trig functions: sin, cos, Tan, and reciprocal functions. c. solve for Sin, Cos, Tan with ratios of the sides of a triangle. d. manipulate formulas to solve for angle theta (or Phi) and unknown side. e. solve any right triangle with ASA and SAS information. f. identify radius vectors, vector rotation, signs of trig functions in the circular system. g. define standard and non-standard rotation of radius, and effect on values. h. interpret trigonometric tables. i. employ standard methods for converting degrees to functions, and functions to degrees. j. solve the functions of an angle greater than 360 degrees. k. reduce the functions of any angle to the functions of an acute triangle.	TX (C) CH 23 TX (C) CH 24 TX (F) CH 8-14	30/30	L/D/WS/Q HO-15
16. APPLICATION OF RIGHT TRIANGLE TO SIMPLE (A.C.) CIRCUITS. a. solve for impedance, voltage, current and power. b. recognize and define single and polyphase functions c. perform mathematical analyses using calculator functions.	TX (C) CH 32/4 TX (E/F) ALL	6/12	L/D/WS/T HO-10

END OF SECOND SEMESTER - FIRST YEAR

MATHEMATICS CURRICULUM

THIRD SEMESTER - SECOND YEAR

ELECTRONIC TECHNOLOGY MATHEMATICS CURRICULUM OUTLINE.

SUBJECT - UNITS	TEXT/MATLS	CLASS/ HMWORK HRS	EVAL/ACTIVITY
THIRD SEMESTER - SECOND YEAR			
1. ELEMENTARY PLANE VECTORS a. scalar and vector quantities defined. b. Angular notation.	TX (C) CH 28	2/1	L/WS
2. PHASOR ALGEBRA a. specify rectangular coordinates b. axis of reals, imaginary axis c. defining the J operator for complex numbers. d. add, subtract, multiply, divide J terms. e. polar notation f. convert functions of rectangular notation to polar, and polar to rectangular. g. phasor relationships to electronic frequency devices.	TX (F) CH 12	9/9	L/D/WS/Q HO-4
3. COMPLEX RLC CIRCUIT ANALYSIS a. calculate sum, product, quotient, and difference of two or more J terms. b. determine sum, product, quotient, and difference of two or more complex numbers in rectangular form. c. determine product or quotient of two more complex numbers in polar form. d. solve non-resonant series, parallel, and combination circuit impedances in rectangular and polar form. e. express reactances, resistances, and impedances in J notation and polar format. f. construct and solve fractional equations and formulas involving rectangular and polar forms of notation.	TX (F) CH 13	12/12	L/D/WS/Q HO-9

ELECTRONIC TECHNOLOGY MATHEMATICS CURRICULUM OUTLINE.

SUBJECT - UNITS	TEXT/MATLS	CLASS/ HMWORK HRS	EVAL/ACTIVITY
THIRD SEMESTER - SECOND YEAR			
4. RESONANT CIRCUIT ANALYSIS a. definition of resonance b. application of phasor algebra to active circuits, frequencies, and components. c. express fractional equations and formulas for solution of poly-phase phasor at a given frequency. d. express solutions in rectangular and polar form for electrical circuit relationships. e. mesh analysis of Y and Delta circuits.	TX (C) CH 33	9/9	L/D/WS Quarter test HO-10
5. INTRODUCTION TO LOGARITHMS a. the need for accuracy provided by logarithms. b. logarithmic notation c. logarithm of a product, quotient, power and a root. d. common logs e. natural logs f. reading and interpolation of log values from log tables. g. define characteristic and mantissa h. algebraic and arithmetic operations with logs of simple and complex numbers. i. graphing the log function j. application of log functions in electronic circuits.			
6. APPLICATION OF LOGS IN ELECTRONICS a. log gain formulas for: (1) amplifiers (2) noise and attenuation (3) power measurement (4) antennas (5) radio propagation devices.	TX (C) CH-34	4/6	L/D/WS/Q HO-3

END OF THIRD SEMESTER

MATHEMATICS CURRICULUM

FOURTH SEMESTER - SECOND YEAR

ELECTRONIC TECHNOLOGY MATHEMATICS CURRICULUM OUTLINE.

SUBJECT - UNITS	TEXT/MATLS	CLASS/ HMWORK HRS	EVAL/ACTIVITY
FOURTH SEMESTER - SECOND YEAR			
7. SOLID STATE MATHEMATICS a. linear and fractional equations for semiconductor devices. b. computing diode (DC) parameters c. computing diode (AC) parameters d. formulas and applications for zener diodes.	TX (G) CH 2-4	3/3	L/WS/Q HO-4
8. TRANSISTOR CIRCUIT MATHEMATICS a. thevinin math for electrical circuits b. biasing formulas for transistors and associated circuitry. c. computation of AC and DC Beta. d. voltage divider formulas for transistor circuitry. e. complex fractional equations for single and multi-stage circuits	TX (G) CH 5-7	20/20	L/D/WS/T HO-10
9. TRANSISTOR AMPLIFIERS a. hybrid (H) parameters/formulas for transistor characteristic. b. gain formulas for Class A,B, and C amplifiers. c. application of complex fractional equations. d. variation of (H) parameters and interpretation of (H) graphs.	TX (G) CH 8-11	6/4	L/D/WS/Q
10. FREQUENCY EFFECTS ANALYSIS a. application of phasor math. b. frequency response and bandwidth formulas. c. stiff coupling analysis. d. millers theorem proved by algebraic analysis. e. impedance matching formulas. f. constructing the bode plot through application of logarithmic formulas.	TX (G) CH 13-14	6/6	L/WS/Q HO-4
11. LINEAR CIRCUITS a. mathematical analysis of integrated op-amp circuits. b. applied complex math for (50) op-amp circuit configurations.	TX (H) all chapters	30/20	L/D/WS quarter test HO-30

END OF FOURTH SEMESTER

BIBLIOGRAPHY OF TEXTS
for
APPLIED MATHEMATICS FOR ELECTRONICS TECHNOLOGY

1. TEXT A — PRACTICAL ALGEBRA: A Self Teaching Guide
1st Edition
Selby, Peter H.
Wiley & Sons Inc. New York, 1978

2. TEXT B — DC CIRCUITS - CIRCUIT ANALYSIS METHODS VOL I
3rd. printing
Texas Instruments Learning Center (Staff)
Dallas, Texas, 1979.

3. TEXT C — BASIC MATHEMATICS FOR ELECTRONICS
5th Edition
Cooke, Adams, Dell
McGraw-Hill, New York, 1970.

4. TEXT D — DC CIRCUITS - CIRCUIT ANALYSIS METHODS VOL II
3rd printing
Texas Instruments Learning Center (Staff)
Dallas, Texas, 1979.

5. TEXT E — AC CIRCUITS - BASIC CIRCUIT CONCEPTS VOL I
3rd printing
Texas Instruments Learning Center (Staff)
Dallas, Texas, 1979.

6. TEXT F — AC CIRCUITS - CIRCUIT ANALYSIS METHODS VOL II
3rd printing
Texas Instruments Learning Center (Staff)
Dallas, Texas, 1979.

7. TEXT G — ELECTRONIC PRINCIPLES
3rd Edition
Malvino, Albert Paul, PhD
McGraw-Hill, New York, 1983.

8. TEXT H — OPERATIONAL AMPLIFIERS AND LINEAR INTEGRATED CIRCUITS
2nd Edition
Coughlin, Robt. F., and Driscoll, Frederick F.
Prentice Hall, New Jersey, 1982.

Curriculum Outline
SNO - ISLE VOCATIONAL SKILLS CENTER

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURSES	EVALUATION
. ORIENTATION TO DENTISTRY A. Describe psychology in the Dental Office B. Define and use terms in the specialized language of the dental field. C. List the dental specialties D. Explain what condition each specialist treats	Lecture Class Discussion Workbook	10	R/B Ch. 1,3 T/E Ch. 1,2,3,10 C - "Psychology in Dental Office" A - Ch. 1,2	Test (75%) Review Exercises (s/u)
. ANATOMY A. Identify & Locate intra-oral structures B. Identify & Locate permanent, primary & mixed dentition C. Identify & Locate surfaces of teeth D. Identify & Locate bones of face E. Identify & Locate muscles of face F. Identify & Locate salivary glands	Lecture Class Discussion Flash cards Workbook	15	R/B Ch. 4 T/E Ch. 4,6 A Ch. 3-20 C - "Dental" Terminology C - "Cavity Classification" H - 1,7,2,8	Test (75%) Review Exercises (s/u)

Curriculum Outline
SNO - ISLE VOCATIONAL SKILLS CENTER

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURSES	EVALUATION
G. Identify structures of tooth				
H. Identify tissues of tooth				
I. Identify supporting structures of tooth				
J. Identify classification of occlusion				
k. Identify classification of cavities				
L. Chart caries				
3. PREVENTION & DENTAL SCIENCES	Lecture Demonstration Class Discussion	15	R/B Ch. 6,8,9,17,19,20 T/E Ch. 7,9,15,22 H 3.12 P.D.R.	Test (75%) Competency
A. Identify & Name extrinsic materials formed on teeth				
B. Identify & Name intrinsic & extrinsic stains on teeth				
C. Describe plaque, its composition & the plaque theory				
D. Perform plaque removal				
E. Describe dental diseases				
F. Describe role of nutrients/diet in dental health				
G. Types, use and forms of fluoride				

Curriculum Outline
SNO - ISLE VOCATIONAL SKILLS CENTER

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURSES	EVALUATION
H. Perform Topical Fluoride application				
I. Describe etiology of dental diseases				
J. Obtain medical/dental health history				
K. Explain importance for obtaining health histories & learning knowledge of medical conditions				
L. Obtain vital signs & describe normals				
M. Perform CPR & Heimlich maneuver				
N. Explain steps taken for dental office emergency				
O. Identify pathological conditions of oral cavity				
P. Identify common pharmacological actions of drugs used in dentistry				
4. RADIOLOGY	Lecture/Demonstration Class Discussion	10	R/B Ch. 18 T/E Ch. 21 RMI- "Darkroom Techniques" H-4.4, 4.6, 4.9	Test (75%) Competency (85%)
A. Explain how radiographs are obtained				
B. Identify safety precautions with radiation				

Curriculum Outline
SNO - ISLE VOCATIONAL SKILLS CENTER

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURSES	EVALUATION
C. Explain effects of radiation				
D. Identify & mix chemicals used for exposing & developing x-rays				
E. Explain types of radiation				
5. SUPPORTING SERVICES	Lecture/Demonstration Class discussion Workbook	15	RMI-"Introduction to Methods of Sterilization" H - 2.3	Test (75%) Competency (85%)
A. Describe asepsis				
B. Identify microorganisms				
C. Identify types of bacteria			R/B Ch. 6,7 T/E Ch. 16,17 C - "Introduction to Dental Instrument Sterilization & Disinfection	
D. Identify types of microorganisms found in plaque & caries				
E. Explain what diseases microorganisms cause				
F. List ways microorganisms can be transmitted				
G. Describe ways & agents that kill microorganisms				
H. Define ways to maintain aspesis				
I. Perform methods of surface disinfection				

Curriculum Outline
SNO - ISLE VOCATIONAL SKILLS CENTER

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURSES	EVALUATION
J. Perform methods of instrument disinfection & sterilization				
6. OPERATIVE DENTISTRY A. Describe types of drugs B. Describe types of anesthesia C. Describe compositions of various types of anesthetics D. Describe action of various types of anesthetics E. Describe precautions taken with types of anesthetics F. Describe possible complications of anesthetics G. Describe methods of medication administration H. Define word elements, terms & abbreviations	Lecture/ Demonstration	20	T/E Ch. 8 R/B Ch 10,11,12, 13,14,15 RMI-"Capping" H-2.9,2.20	Test (75%) Competency (85%)
7. DENTAL MATERIALS A. Identify the properties, the chemicals & the utilization of composite material		20		

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURSES	EVALUATION
B. Mix the chemicals to form composite materials				
C. Identify the properties, the chemicals & the utilization of amalgam				
D. Mix mercury & alloy to form amalgam				
E. Identify the properties, the chemicals and the utilization of dental gold				
F. Identify the properties, the chemicals & utilization of the various dental cements				
G. Mix chemicals to form various cements				
H. Identify the properties, the chemicals & utilization of the various dental bases				
I. Mix the chemicals to form various bases				
J. Identify the properties, the chemicals & utilization of cavity liners				
K. Place cavity liners				

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURSES	EVALUATION
L. Identify the properties, the chemicals & utilization of various types of temporary restorations				
M. Mix the chemicals to form various types of temporary restorations				
N. Identify the properties, the chemicals & utilization of the custom tray material				
O. Mix the chemicals to form a custom tray				
P. Identify the properties, the chemicals & utilization of gypsum materials				
Q. Identify the properties, the chemicals & utilization of alginate				
R. Mix the chemicals to form alginate & obtain an alginate impression				
S. Mix the chemicals to form irreversible gypsum & fabricate a study cast				
T. Construct a poured & trimmed study cast				
U. Identify the properties, the chemicals & utilization of various rubber impression materials				

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURSES	EVALUATION
V. Mix the chemicals to form the various rubber impression materials & obtain an impression				
8. CLINICAL/PRACTICAL APPLICATIONS Use knowledge of Anatomy, Physiology, Psychology, Chemistry, & Dental terminology to perform:	Lecture Demonstration Class Discussion Clinic Internship	20		

* Within the total Dental Assisting course, approximately 250 hours are spent learning & using clinical & clerical skills needed by a dental assistant. The competencies & hours listed in 12, CLINICAL/PRACTICAL APPLICATIONS, consist of that portion which necessitates & demonstrates knowledge of Anatomy, Physiology, Chemistry & Dental terminology

A. Chairside assistant duties
   1. greet,seat & prepare patient
   2. position patient, assistant, operator & equipment
   3. pass instruments & supplies
   4. maintain operating field
   5. maintain pleasant & comfortable atmosphere
   6. mix & pass materials
   7. expose diagnostic radiographs
   8. perform coronal polish
   9. perform fluoride application
   10. place & remove rubber dam
   11. place & remove matrix band & wedge
   12. place cavity liner, base &/or temporary restoration
   13. teach home care instruction & disease prevention
   14. chart caries, existing restorations & procedures needing to be done

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURSES	EVALUATION

15. Obtain medical/dental health history
16. Obtain vital signs
17. Take impressions
18. Place topical anesthetic
19. Load & pass anesthetic syringe
20. Maintain sterile chain
21. Identify, place & remove rotary cutting instruments into handpieces
22. Give Pre & Post operative instructions
23. Mix & pass composite & amalgam

B. STERILIZATION DUTIES

1. Maintain surface disinfection
2. Disinfect & sterilize instruments
3. Maintain supplies & inventory
4. Set up trays
5. Maintain equipment

C. RECEPTIONIST DUTIES

1. Schedule patients
2. Answer telephones
3. Take messages
4. File charts
5. Simple bookkeeping
6. Maintain recall system
7. Complete insurance form
8. Maintain office correspondence
9. Handle financial arrangements/estimates

Curriculum Outline
SNO - ISLE VOCATIONAL SKILLS CENTER

SUBJECT - UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURSES	EVALUATION

D. LABORATORY DUTIES

1. Fabricate custom trays
2. Pour & trim study casts
3. Fabricate temporary crowns

E. DARKROOM DUTIES

1. Mix & maintain chemical solutions
2. Develop radiographs
3. Mount radiographs
4. Maintain supplies

Total Hours 120

Dental Assisting Program
Sno-Isle Vocational Skills Center

MATERIALS / RESOURCES CODE

I. Student Textbooks / Workbooks

R/B - The Dental Assistant, 5th Edition, Richard E. Richardson, Roger E. Barton, 1978, McGraw Hill.

T/E - Modern Dental Assisting, Hazel O. Torres, Ann Ehrlich, 1976, Saunders.

A - The Dental Assistant, 3rd Edition, Pauline Andersen, 1974, Delmar.

D - Secretarial Dental Assistant, Mary Ann Douglas, 1976, Delmar.

C - Colwell Company, 1978, Champaign, Illinois.

II. Student References

PDR - Physicians Desk Reference, 1984, Medical Economics Company.

H - Hoffman, 1978, Singer Education Division, Education Systems.

RMI-RMI - Learning Systems Inc., 1978, S & S Colony Associates.

III. Other resources (used periodically throughout the course by instructor &/or students)

Dimensions of Dental Hygiene, Pauline Steele, 1966, Lea and Febiger.

Clinical Practice of the Dental Hygienist, 3rd Edition, Esther M. Wilkins, 1971, Lean and Febiger.

tmj

84-AWD(233)NB

ENGLISH CURRICULUM OUTLINE

AUTOMATED OFFICE SYSTEMS

Sno-Isle Skills Center
9001 Airport Road
Everett, Washington 98204

ELIZABETH A. ARNDT
Instructor

SUBJECT UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
LANGUAGE STRUCTURE				
Unit 1 SENTENCE - After completing this unit of instruction, the student will be able to: A. Define a sentence. B. Identify the different types of sentences and ending punctuation. C. Identify and label a subject and a predicate. D. Recall classes of nouns: common, proper, concrete, abstract, collective. E. Recall usage of adjectives, adverbs, prepositions, conjunctions, pronouns.	Lecture Exercise Sheets	2	A, B, C	Test
Unit 2 NOUNS - Plural/Possessive Forms After completing this unit of instruction, the student will be able to: A. Identify and distinguish between use of plural nouns and the possessive form.	Lecture Exercise Sheets	3	A, B, C, D	Test

Continued:

*See Code On Page

SUBJECT UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
LANGUAGE STRUCTURE Unit (Continued) 2 B. Form plural nouns correctly. C. Form possessive nouns correctly D. Form possessive and plural forms of compound nouns, letters and figures, proper nouns, personal titles, nouns always singular, nouns always plural, nouns showing separate ownership, nouns showing joint ownership.				
Unit 3 COMMA - After completion of this unit of instruction, the student will be able to: A. Use commas to separate words or group of words in a series. B. Use commas to separate two or more adjectives. C. Use commas to set off non-essential expressions -- words, phrases and clauses.	Lecture Overheads Exercise Sheets	5	A, B, C, D	Test

Continued:

*See Code On Page

SUBJECT UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
LANGUAGE STRUCTURE Unit (Continued) 3 D. Use a comma after introductory elements E. Make a decision when to use a comma to separate two independent clauses joined be a conjunction. F. Use commas to set off words, phrases or clauses that interrupt flow of sentence. G. Use commas with name, title used in direct address. H. Use commas with identifying appositive or explanatory expressions. I. Use commas to set off the year when it follows the month and day. J. Use commas to set off the name of a state, country, county or the equivalent. K. Use commas to set off titles and degrees that follow the names of persons. Continued: *See Code On Page				

SUBJECT UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
LANGUAGE STRUCTURE				
Unit 4 SEMICOLON - After completion of this unit of instruction, the student will be able to: A. Use a semicolon between independent clauses when conjunction is omitted. B. Use a semicolon to separate items in a series if items already contain commas. C. Use semicolons to separate a series of dependent clauses if they are long or contain internal commas.	Lecture Exercise Sheets	1	A, B, C, D	Test
Unit 5 COLON - After completion of this unit of instruction, the student will be able to: A. Use a colon when a clause contains an anticipatory expression (such as the "following", "as follows",	Lecture Exercise Sheets	1	A, B, C, D	Test

Continued:

*See Code On Page

SUBJECT UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
LANGUAGE STRUCTURE Unit (Continued) 5 "thus" and "these") and directs attention to a series of explanatory words, phrases or clauses. B. Use a colon if the items in a series are listed on separate lines. C. Use a colon when hours and minutes are expressed as figures D. Use a colon after salutation in business letter. NOTE: Other punctuation marks will be taught as appropriate. (Dashes, Parentheses, Quotation Marks, Underscore, Asterisks, Diagonals, Brackets) Unit 6 MINI-GRAMMAR LESSON - Will be given when appropriate on: Abbreviations, Capitalization, Footnotes, Hyphenated Words, Negatives, State Abbreviations, Tables, Word Division.			A, B, C, D	

*See Code On Page

SUBJECT UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
ENGLISH COMPOSITION				
Unit 1 SENTENCE DEVELOPMENT - After completion of this unit of instruction, the student will be able to: A. Choose any word and write a complete sentence. B. Punctuate sentence correctly. C. Write five related thoughts for sentence written.	Lecture Writing Exercises	2	A, B, C, D, H, I, J	Graded Assign.
Unit 2 PARAGRAPH DEVELOPMENT - After completion of this unit of instruction, the student will be able to: A. Choose any word and write a complete sentence. B. Write five related thoughts for sentence written. C. Write five topic sentences from thoughts. D. Punctuate sentences correctly	Lecture Writing Exercises	4	A, B, C, D, H, I, J	Graded Assign.

*See Code On Page

SUBJECT UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
ENGLISH COMPOSITION				
Unit 3 PARAGRAPH DEVELOPMENT (Cont.) - After completion of this unit of instruction, the student will be able to: A. Choose any word and write a complete sentence. B. Write five related thoughts for sentence written. C. Write five topic sentences from thoughts. D. Write five related thoughts for each topic sentence. E. Punctuate sentences correctly F. Write sentences without duplicating any pronoun more than twice. G. Write sentences without repeating any major word twice. H. Write sentences without the use of contractions. I. Write sentences with 10-12 grade level word choice.	Lecture Writing Exercises	5	A, B, C, D, H, I, J	Graded Assign.

*See Code On Page

SUBJECT UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
ENGLISH COMPOSITION				
Unit 4 PARAGRAPH DEVELOPMENT (Cont.) - After completion of this unit of instruction, the student will be able to: A. Choose any word and write a complete sentence. B. Write five related thoughts for sentence written. C. Write five topic sentences from thoughts. D. Write five related thoughts for each topic sentence. E. Write sentences for each group of related thoughts. F. Punctuate sentences correctly G. Write sentences without duplicating any pronoun more than twice/per group. H. Write sentences without repeating any major word twice. I. Write sentences without the use of contractions. J. Write sentences with 10-12 level vocabulary.	Lecture Writing Exercises	7	A, B, C, D, H, I, J	Graded Assign.

Continued:
*See Code On Page 131

SUBJECT UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
ENGLISH COMPOSITION				
Unit 5 PARAGRAPH DEVELOPMENT (Cont.) - After completion of this unit of instruction, the student will be able to: A. Choose any word and write a complete sentence. B. Write five related thoughts for sentence written. C. Write five topic sentences from thoughts. D. Write five related thoughts for each topic sentence. E. Punctuate sentences correctly F. Write sentences without duplicating any pronoun more than twice. G. Write sentences without repeating any major word twice. Continued: *See Code On Page	Lecture	10	A, B, C, D, H, I, J	Graded Assign.

SUBJECT UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
ENGLISH COMPOSITION				
Unit 5 PARAGRAPH DEVELOPMENT (Cont.) - H. Write sentences without the use of contractions. I. Write sentences with 10-12 grade level word choice. J. Identify topic sentence K. Arrange sentences in paragraph order.				
Unit 6 PARAGRAPH DEVELOPMENT (Cont.) After completion of this unit of instruction, the student will be able to: A. Use all of the procedures outlined above. B. Write a five paragraph, organized essay on any given word.	Lecture Writing Exercises	15	A, B, C, D H, I, J	Graded Assign.

*See Code On Page

SUBJECT UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
MACHINE TRANSCRIPTION				
Unit 1 LANGUAGE SKILL DEVELOPMENT - After completion of this unit of instruction, the student will be able to: A. Write the correct plural form of each word given. B. Write the correct form for each possessive form. C. Identify and circle correct form of plurals and possessives. D. Spell words correctly when a word ends in a silent "e", adding a suffix. E. Identify and circle the correct end-of-line division for words given. F. Spell correctly words ending in "ie" when adding "ing" G. Spell correctly words ending in "y", adding a suffix. *See Code On Page	Language Skills Prepsheet Workbook	18	E, F, G	Checkup Quiz Graded Transcription

SUBJECT UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
MACHINE TRANSCRIPTION				
Unit 2 LANGUAGE SKILL DEVELOPMENT - After completion of this unit of instruction, the student will be able to: A. Correct errors in punctuation. B. Correct errors in capitalization. C. Identify the correct form of words and numbers D. Identify compound words.	Language Skills Prepsheet Workbook	18	E, F, G	Checkup Quiz Graded Transcript
Unit 3 LANGUAGE SKILL DEVELOPMENT - After completion of this unit of instruction, the student will be able to: A. Correct errors in punctuation. B. Identify correct word form. C. Correct errors in word form and number form. D. Identify appropriate abbreviations.	Language Skills Prepsheet Workbook	18	E, G, C	Checkup Quiz Graded Transcript

Continued:
*See Code On Page

SUBJECT UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
MACHINE TRANSCRIPTION Unit 3 LANGUAGE SKILL DEVELOPMENT - (Cont.) E. Identify and correctly write hyphenated compound adjectives. *See Code On Page				

SUBJECT UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
BUSINESS ENGLISH COMPOSITION				
Unit 1 BUSINESS LETTERS, MEMORANDA - After completion of this unit of instruction, the student will be able to: A. Identify and compose the parts of a business letter. B. Identify parts and compose a memorandum.	Lecture Overheads Practice Exercises	10	A, K	Competency Test Graded Assign.
Unit 2 MINUTES, AGENDAS, ITINERARIES - After completion of this unit of instruction, the student will be able to: A. Define the terms minutes, agenda and itinerary. B. Identify points to include in the minutes of a meeting. C. Arrange the steps of the agenda in proper sequence. D. Demonstrate the ability to: 1. compose minutes 2. compose an agenda 3. compose an itinerary	Lecture Overheads Practice Exercises	15	A, K	Competency Test Graded Assign.

*See Code On Page

SUBJECT UNITS	LEARNING ACTIVITIES	INSTRUCTIONAL HOURS	MATERIALS/ RESOURCES	EVALUATION
BUSINESS ENGLISH COMPOSITION				
Unit 3 OUTLINES - After completion of this unit of instruction, the student will be able to: A. Give the purpose of an outline. B. Explain how to obtain correct margins. C. List the type of headings and give an example of each. D. Discuss the proper spacing in an outline. E. Demonstrate the ability to write an outline.	Lecture Overheads Practice Exercises	5	A, K	Competency Test Graded Assign.
		TOTAL INSTRUCTION TIME:	139 Hours	

AUTOMATED OFFICE SYSTEMS
List Of Texts Used With English Curriculum

1. Text A
   BUSINESS ENGLISH ESSENTIALS
   6th Edition
   Henderson/Voiles
   McGraw-Hill Book Company

2. Text B
   ENGLISH MADE EASIER
   Joseph Bellafiore
   Amsco School Publications, Inc.

3. Text C
   COLLEGE ENGLISH SENTENCE COMPOSITION
   Wilbert J. Levy
   An Amsco College Publication

4. Text D
   THE GREG REFERENCE MANUAL
   Fifth Edition
   Sabin
   McGraw-Hill Book Company

5. Text E
   A MODERN APPROACH TO BUSINESS SPELLING
   Second Edition
   Annie De Caprio
   Bobbs-Merrill Educational Publishing
   Indianapolis

6. Text F
   COLLEGE ENGLISH INSTANT SPELLING POWER
   Norman Lewis
   An Amsco College Publication

7. Text G
   TRANSCRIPTION SKILLS FOR INFORMATION PROCESSING
   INCORPORATING A SEQUENCED LANGUAGE ARTS PROGRAM
   Units I, II, III
   Schatz/Funk
   McGraw-Hill Book Company

8. Text H
   NEW WORLD DICTIONARY
   Second College Edition
   David B. Guralnik, Editor
   William Collins Publishers, Inc.

9. Text I — THE NEW AMERICAN ROGET'S COLLEGE THESAURUS
Luzzatto and Morehead, Editors
Signet Books

10. Text J — EFFECTIVE BUSINESS COMMUNICATIONS
Bonnie D. Phillips
Delmar Publishers

11. Text K — UNITS OF INSTRUCTION FOR VOCATIONAL OFFICE EDUCATION VOLUME 3
NW Vocational Curriculum Management Center
Olympia, Washington

Note: These texts are used for the majority of curriculum. Other resources are used as needed.

SNO-ISLE VOCATIONAL SKILLS CENTER 84-AWD(233)NB

CONSTRUCTION MATH

1. Arithmetic of Whole Numbers

   A. Addition of whole numbers
   B. Subtraction of whole numbers
   C. Multiplication of whole numbers
   D. Division of whole numbers

2. Fractions

   A. Working with fractions
   B. Equivalent fractions
   C. Reducing to lowest terms
   D. Finding L.C.D.
   E. Addition of fractions
   F. Subtraction of fractions
   G. Multiplication of fractions
   H. Division of fractions

3. Decimal numbers

   A. Addition and subtraction of decimals
   B. Multiplication of decimals
   C. Division of decimals
   D. Rounding off
   E. Averages
   F. Decimal fractions
   G. Conversion of decimals to common fractions
   H. Decimals of a foot
   I Exponents and square roots
   J. Negative numbers
   K. Subtraction of signed numbers
   L. Multiplication of signed numbers

4. Percent

   A. Introduction to percent
   B. Changing fractions to percent
   C. Changing percent to decimal

5. Measurement

   A. Working with measurement numbers
   B. Feet, inches and fractions
   C. Feet and decimal fractions
   D. Rounding measurement numbers

6. Direct measurement tools

   A. Tapes
   B. Folding rule
   C. Chain
   D. Engineers rod (Philadelphia And Frisco)
   E. Engineers rule
   F. Architect and Engineers scale

6. Practical Geometry

   A. Angle Facts
   B. Angle Measurement
   C. Plane Figures (area and perimeter)
   D. Squares
   E. Rectangles
   F. Parallelograms
   G. Trapezoids
   H. Triangles
   I. Polygons (regular and irregular)
   J. Circles (sectors, chords, arcs)
   K. Rings

7. Direct Computation

   A. Cubic Inches
   B. Cubic Feet
   C. Cubic Yards
   D. Cubic Yards to Tons
   E. Board Foot Measurement

8. Solid Figures and Volumes of

   A. Prisms
   B. Pyramids
   C. Cylinders
   D. Cones
   E. Frustums
   F. Spheres

9. Geometric Construction

   A. Compass
   B. Straight Edge
   C. Framing Square
   D. Protractor

10. Introduction to Trigonometry

   A. Angles and Triangles
   B. Radiant Measure
   C. Solving Right Triangles with the Framing Square

CONSTRUCTION
MATH OUTLINE

UNIT	LEARNING ACTIVITIES	INST. HRS.	MATERIALS/RESOURCES	EVALUATION
1. ARITHMETIC OF WHOLE NUMBERS. A. ADDITION B. SUBTRACTION C. MULTIPLICATION D. DIVISION	1. CLASS ROOM LECT 2. CHAPTER 1 3. LAY-OUT PROBLEMS IN SHOP WITH WHOLE NUMBERS	9 HRS.	MATH FOR THE TRADES. MATH FOR CARPENTERS METAL RULE TAPE MEASURE FRAMING SQUARE.	OBSERVATION. WRITTEN TEST 80% TO PASS
2. FRACTIONS. A. WORKING WITH FRAC. B. EQUIV FRACTIONS C. REDUCING D. FINDING L.C.D. E. ADDITION F. SUBTRACTION G. MULTIPLICATION H. DIVISION	1. CLASS RM. LECTURE 2. CHAPTER 2. 3. LAY-OUT PROBLEMS IN SHOP WITH WHOLE NUMBERS & FRACT.	9. HRS.	SAME TEXT AND MATLS	OBSERVATION WRITTEN TEST 80% TO PASS
3. PERCENT A. INTRO TO PERCENT B. CHANGING FRACTIONS TO PERCENT C. CHANGING PERCENT TO DECIMAL.	1. CLASS RM. LECTURE 2. CHAPTER 4.	2 HRS.	SAME TEXT	WRITTEN TEST 80% TO PASS

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CONSTRUCTION
MATH OUTLINE

CURRENT - UNITS	LEARNING ACTIVITIES	INST. HRS.	MATERIALS/RESOURCES	EVALUATION
4. DECIMAL NUMBERS. A. ADDITION & SUBTRACTION B. MULTIPLICATION C. DIVISION D. ROUNDING OFF E. AVERAGES F. DECIMAL FRACTIONS G. CONVERSIONS OF DECIMAL TO COMMON FRACTIONS.	1 CLASS ROOM LECTURE 2. LAY-OUT PROBLEMS IN SHOP.	8 HRS.	MATH FOR THE TRADES MATH FOR CARPENTERS. ENGINEERS TAPE & FOLDING RULE ENGINEERS ROD.	OBSERVATION WRITTEN TEST 80% TO PASS LAY-OUT TEST 100% TO PASS.
5. DIRECT MEASURMENT TOOLS. A TAPES B. FOLDING RULES C. CHAIN D. ENGINEERS ROD E ENGINEERS RULE F. DRAW SCALE G ENGINEERS SCALE		8 HRS.	SAME TEXT ALL MEASUREMENT TOOLS LISTED AT LEFT.	OBSERVATION WRITTEN TEST 80% TO PASS

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CONSTRUCTION MATH APTITUDE

UNIT OF INSTRUCTION	LEARNING ACTIVITIES	INST. HRS.	MATERIALS/RESOURCES	EVALUATION
5. MEASURMENT A. WORKING WITH MEASURMENT NUMBERS B. FEET- INCHES & FRACTIONS C. FEET & DECIMAL FRACTIONS. D. ROUNDING MEAS. NUMBERS.	1. CLASS RM. LECTURE 2. LAY-OUT PROBLEMS IN FIELD. 3. CHAPTER 5.	8 HRS.	MATH FOR THE TRADES MATH FOR CARPENTERS 100 FT. TAPE ENGINEERS ROD. CALCULATOR. FRAMING SQUARE	OBSERVATION WRITTEN TEST 80% TO PASS LAY-OUT TEST 100% TO PASS
6. PRACTICAL GEOMETRY A ANGLE FACTS B ANGLE MEASURMENT C PLANE FIGURES D. SQUARES E. RECTANGLES F. PARALLELOGRAMS G. TRAPEZOIDS H TRIANGLES I. POLYGONS J. CIRCLES K. RINGS.	1 CLASS RM. LECTURE 2. LAY-OUT PROBLEMS. IN FIELD	8 HRS	TEXT SAME AS ABOVE	OBSERVATION WRITTEN TEST 80% TO PASS LAY-OUT TEST 80% TO PASS

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CONSTRUCTION
MATH OUTLINE

RELATED UNITS	TEACHING ACTIVITIES	INST. HRS.	MATERIALS/RESOURCES	EVALUATION
GEOMETRIC CONST A. COMPASS B. STRAIGHTEDGE C. FRAMING SQUARE D. PROTRACTOR E. DIVIDERS.	CLASS ROOM LECTURE. PROJECTS BUILT WITH TOOLS LISTED AT LEFT	8 HRS	SAME TEXT ALL TOOLS LISTED AT LEFT. CONSTRUCTING TOOLS.	OBSERVATION COMPLETION OF PROJECTS. WRITTEN TEST 80% TO PASS

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CONSTRUCTION
MATHEMATICS

UNIT TITLE	LEARNING ACTIVITIES INST. HRS.	MATERIALS/RESOURCES	EVALUATION
DIRECT COMPUTATION A CUBIC INCHES B. CUBIC FEET C. CUBIC YARDS D. CUBIC YARDS TO TONS. E. BOARD FT MEASURMENT	CLASS ROOM LECTURE SHOP PROBLEMS. FIELD PROBLEMS. 6 HRS.	SAME TEXT	WRITTEN TEST 80% TO PASS FIELD PROBLEMS IN ESTIMATING VOLUME.
SOLID FIGURES AND VOLUMES OF: A. PRISMS B. PYRAMIDS C. CYLINDERS D. CONES E. FRUSTUMS F. SPHERES	CLASS ROOM LECTURE 4 HRS	SAME TEXT	WRITTEN TEST 80% TO PASS.

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